


FORM PTO-1390 (REV 5-93)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NO. 00771.00004	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				U.S. APPLICATION NO. (If known, see 37 C.F.R. 1.51) TB 09/582872	
INTERNATIONAL APPLICATION NO. PCT/NL98/00723		INTERNATIONAL FILING DATE 21 December 1998		PRIORITY DATE CLAIMED 8 January 1998	
TITLE OF INVENTION PIPE CONNECTION					
APPLICANT(S) FOR DO/EO/US Hermanus G. GROBBENHAAR					
Applicant herewith submits to the United State Designated/Elected Office (DO/EO/US) the following items and other information:					
<ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.</li> <li>2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.</li> <li>3. <input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).</li> <li>4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.</li> <li>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> is transmitted herewith (required on if not transmitted by the International Bureau).</li> <li>b. <input checked="" type="checkbox"/> has been transmitted by the International Bureau. A copy of Form PCT/IB/308 is attached.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li>6. <input checked="" type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).</li> <li>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau).</li> <li>b. <input type="checkbox"/> have been transmitted by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li> <li>d. <input checked="" type="checkbox"/> have not been made and will not be made.</li> </ol> </li> <li>8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</li> <li>9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</li> <li>10. <input checked="" type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</li> </ol>					
Items 11-16 below concern other document(s) or information included:					
<ol style="list-style-type: none"> <li>11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98.</li> <li>12. <input type="checkbox"/> An Assignment document for recording. A separate cover sheet in compliance with 37 C.F.R. 3.28 and 3.31 is included.</li> <li>13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. <ol style="list-style-type: none"> <li><input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment.</li> </ol> </li> <li>14. <input checked="" type="checkbox"/> A substitute specification.</li> <li>15. <input type="checkbox"/> A change of power of attorney and/or address letter.</li> <li>16. <input checked="" type="checkbox"/> Other items or information: International Search Report (ISA/EPO)</li> </ol>					

534 Rec'd PCT/PTC 06 JUL 2000

U.S. APPLICATION NO. (If known, see 37 CFR 1.51) TBA 09/582872		INTERNATIONAL APPLICATION NO. PCT/NL98/00723		ATTORNEY'S DOCKET NO. 00771.00004	
17. ■ The following fees are submitted:  <b>Basic National Fee (37 CFR 1.492(a)(1)-(5):</b> Search Report has been prepared by the EPO or JPO \$840.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) \$670.00 No International preliminary examination fee paid to USPTO (37 CFR 1.482), but international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$690.00 Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$970.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$ 96.00				CALCULATIONS	PTO USE ONLY
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$840.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than 20 or 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$0.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total Claims	16 -20 =	0	X \$ 18.00	\$0.00	
Independent Claims	1 - 3 =	0	X \$ 78.00	\$0.00	
Multiple dependent claims (if applicable)			X \$260.00	\$0.00	
TOTAL OF ABOVE CALCULATIONS =				\$840.00	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed (note 37 CFR 1.9, 1.27, 1.28).				\$0.00	
SUBTOTAL =				\$840.00	
Processing fee of \$130.00 for furnishing the English translation later than 20 or 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$0.00	
TOTAL NATIONAL FEE =				\$840.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property.				\$0.00	
TOTAL FEES ENCLOSED =				\$840.00	
				Amount to be: refunded	\$
				charged	\$
a. ■ A check in the amount of \$840.00 to cover the above fees is enclosed. b. □ Please charge my Deposit Account No. 19-0733 in the amount of \$_____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. ■ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 19-0733. A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO:  Banner & Witcoff, Ltd. Eleventh Floor 1001 G Street, N.W. Washington, D.C. 20001-4597  Telephone: (202) 508-9100					
<div style="text-align: right;">             SIGNATURE             Franklin D. Wolffe            Registration No. 19,724             Date: July 6, 2000         </div>					

09 / 5 8 2 8 7 2

534 Rec'd PCT/PTC 06 JUL 2000

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of

Atty. Docket: 00771.00004

Hermanus G. GROBBENHAAR

Serial No.: TBA

U.S. National Stage  
International Application No.:  
PCT/NL98/00723

Filed: Herewith

For: PIPE CONNECTION

**PRELIMINARY AMENDMENT**

Assistant Commissioner of Patents  
Washington, D. C. 20231

**BOX PCT**

Sir:

Prior to calculation of claim fees and examination on the merits, please amend the application as follows:

**IN THE ABSTRACT:**

Please insert the following Abstract at the end of the specification, which is also provided herewith on a separate sheet:

**--ABSTRACT OF THE DISCLOSURE**

The invention relates to a connection between a first pipe piece (1) and a second pipe piece (8), wherein the cross section of both pipe pieces is substantially equal, wherein the connection allows at least a mutual angular displacement of the axis of both pipe pieces in a plane extending through both axes, wherein the first pipe piece comprises at least two passages (3, 2) and the second pipe piece comprises at least two passages, and in any mutual position of the pipe pieces the separating walls (10) between the passages in the first pipe piece at least practically make contact with the separating walls between the passages in the second pipe piece, wherein both pipe pieces

005230-262960

have a round cross section and wherein the boundary surface between the pipe pieces extends substantially as a sphere with the point of rotation of the pipe pieces as center. According to a first preferred embodiment the second pipe is provided with a number of passages larger than two. The advantages of the present invention are also achieved in this situation, i.e a separation between both passages in the first pipe piece.--

**IN THE SPECIFICATION:**

Page 1, between the title of the application and the first paragraph, insert the heading --Field of the Invention--.

Page 1, between lines 10 and 11, insert the heading --Background of the Invention--.

Page 1, between lines 33 and 34, insert the heading --Brief Description of the Invention--.

Page 3, between lines 30 and 31, insert the heading --Brief Description of the Drawings--.

Page 4, between lines 11 and 12, insert the heading --Detailed Description of the Invention--.

**IN THE CLAIMS:**

The claim amendments presented herein are based upon claim 1 as amended during prosecution of the PCT application, which amended claim is annexed to the International Preliminary Examination Report, as well as originally presented claims 2-16.

Please amend claims 1, 4, 5, 7, 9, 11, 12, 14 and 15, as follows:

1. (Amended) Connection between a first pipe piece and a second pipe piece, wherein the cross-section of both pipe pieces is substantially equal, wherein the connection allows

at least a mutual angular displacement of the axis of both pipe pieces in a plane extending through both axes, wherein the first pipe piece comprises at least two passages, the second pipe piece comprises at least two passages, and in any mutual position of the pipe pieces the separating walls between the passages in the first pipe piece at least practically make contact with the separating walls between the passages in the second pipe piece, characterized in that both pipe pieces have a round cross-section and that the boundary surface between the pipe pieces extends substantially as a sphere with the point of rotation of the pipe pieces as [centre] center and that the number of passages in the second pipe piece [is so large] provides that the cross-section of the passages is at least two orders of magnitude smaller than the cross-section of the second pipe piece.

Claim 4, lines 1-2, delete "any of the foregoing claims" and insert therefor --claim 1--.

Claim 5, lines 1-2, delete "any of the foregoing claims" and insert therefor --claim 1--.

Claim 7, lines 1-2, delete "any of the foregoing claims" and insert therefor --claim 1--.

Claim 9, lines 1-2, delete "any of the foregoing claims" and insert therefor --claim 1--.

Claim 11, lines 1-2, delete "any of the foregoing claims" and insert therefor --claim 1--.

Claim 12, lines 1-2, delete "any of the foregoing claims" and insert therefor --claim 1--.

Claim 14, lines 1-2, delete "any of the foregoing claims" and insert therefor --claim 1--.

15. (Amended) Connection as claimed in claim 8, characterized in that the catalytic converter is connected to the exhaust pipe on [the] an outlet side of [a] the connection [as claimed in claim 1].

**REMARKS**

By this amendment, the specification has been revised and an Abstract provided in order to place the application in preferred form. In addition, the claims have been amended to eliminate multiple dependencies therefrom. Examination on the merits of the instant application is respectfully requested.

Respectfully submitted,



Franklin D. Wolffe  
Reg. No. 19,724

Date: July 6, 2000

BANNER & WITCOFF, LTD.  
Eleventh Floor  
1001 G Street, N.W.  
Washington, D. C. 20001-4597  
(202) 508-9100

Attachment: Abstract of the Disclosure

FDW:lab

005230-223350

## ABSTRACT OF THE DISCLOSURE

The invention relates to a connection between a first pipe piece (1) and a second pipe piece (8), wherein the cross section of both pipe pieces is substantially equal, wherein the connection allows at least a mutual angular displacement of the axis of both pipe pieces in a plane extending through both axes, wherein the first pipe piece comprises at least two passages (3, 2) and the second pipe piece comprises at least two passages, and in any mutual position of the pipe pieces the separating walls (10) between the passages in the first pipe piece at least practically make contact with the separating walls between the passages in the second pipe piece, wherein both pipe pieces have a round cross section and wherein the boundary surface between the pipe pieces extends substantially as a sphere with the point of rotation of the pipe pieces as center. According to a first preferred embodiment the second pipe is provided with a number of passages larger than two. The advantages of the present invention are also achieved in this situation, i.e a separation between both passages in the first pipe piece.

PIPE CONNECTION

5           The present invention relates to a connection  
between a first pipe piece and a second pipe piece,  
wherein the cross-section of both pipes is substantially  
equal and wherein the connection allows at least a mutual  
angular displacement of the axis of both pipe pieces in a  
10 plane extending through both axes.

Such connections are generally known in the  
form of pieces of flexible pipe.

A desired degree of flexibility is obtained by  
arranging a short piece of flexible pipe between the  
15 first pipe piece and the second pipe piece.

Such a connection functions excellently in  
situations where both pipe pieces are only single-  
passage, i.e. in situations where both pipe pieces are  
only adapted to guide a single gas flow.

20           There are however situations where both pipe  
pieces are divided into at least two passages. Both pairs  
of passages are separated by a partition wall. When a  
flexible pipe piece is arranged between the two pipe  
pieces, the two partition walls will not generally  
25 connect onto each other, so that the passages will be  
mutually connected and a short-circuit will occur.

US-A-4 188 784 provides such a connection for  
this purpose wherein the first pipe comprises at least  
two passages, the second pipe comprises at least two  
30 passages, in that in any mutual position of the pipes the  
separating walls between the passages in the first pipe  
at least practically make contact with the separating  
walls between the passages in the second pipe.

The object of the present invention is to  
35 provide such a connection wherein the partitioning  
between the two passages is maintained up to a position  
beyond the second pipe piece, this at as many different  
mutual angular positions of the pipe pieces as possible.

005280-2233560



This objective is achieved in that both pipe pieces have a round cross-section and in that the separating wall between the pipe pieces extends substantially as a sphere with the point of rotation of the pipe pieces as centre.

According to a first preferred embodiment the second pipe is provided with a number of passages larger than two.

The advantages of the present invention are also achieved in this situation, i.e a separation between both passages in the first pipe piece.

The danger of short-circuit of the gas flow is moreover further reduced when the number of passages in the second pipe piece is so large that the cross-section of the passages is at least two orders of magnitude smaller than the cross-section of the second pipe piece.

According to another preferred embodiment both pipes have a round cross-section and the separating wall between the pipes extends substantially as a sphere with the point of rotation of the pipes as centre.

Although the present invention has a wide field of application, the advantages of the present invention become particularly apparent in the use as components of the exhaust system of a motor vehicle.

In view of the fact that parts of the exhaust are mounted rigidly on the engine and that other parts of the exhaust are mounted with a certain degree of elasticity on the bodywork of a motor vehicle, it will be apparent that diverse components of an exhaust system are subjected to mutual movements. The exhaust systems are usually constructed such that such mutual movements result in a mutual angular displacement between diverse components of an exhaust system.

It is pointed out here that angular displacements are generally very small, being in the order of magnitude of a few degrees, wherein according to the prior art suitable couplings are otherwise known for

mutual coupling of the pipe pieces which enable mutual rotation of these pipe pieces.

The present invention finds more particular application when the first pipe forms a connection  
5 between an engine of a motor vehicle and a catalytic converter, and wherein the second pipe is formed by a converter housing.

A catalytic converter is in any case already provided with a large number of parallel channels which  
10 are particularly attractive to serve as partitioned passages in the present invention.

A further advantage is manifested in the fact that a catalytic converter is a relatively heavy component of an exhaust system, wherein it is attractive  
15 in respect of temperature management to place this component the shortest possible distance from the engine block. So as to subject the catalytic converter as little as possible to the vibrations from the engine block it is particularly attractive to arrange such a connection  
20 according to the invention in the exhaust system and, because of the large number of channels in a catalytic converter, this connection can preferably be used in the proximity of the catalytic converter. The advantages of the invention are particularly manifest in this  
25 embodiment, since it is important that the exhaust gas flows coming from the diverse cylinders remain separated as far as possible so as to prevent mutual influencing of the cylinders.

Other attractive preferred embodiments are  
30 stated in the remaining sub-claims.

The present invention will be elucidated hereinbelow with reference to the annexed drawings, in which:

figure 1 shows a partly broken away perspective  
35 view of a first embodiment of the device according to the present invention;

figure 2 is a schematic perspective view of an engine, wherein a connection according to the present invention is placed between the engine and the catalytic converter;

5 figure 3 shows a cross-sectional view of a catalytic converter which is provided on both sides with a connection according to the present invention;

figure 4 shows a cross-sectional view of a variant of the embodiment depicted in figure 3; and

10 figure 5 shows a cross-sectional view of another variant of the embodiment depicted in figure 3.

Figure 1 shows a first pipe 1 formed by two passages 2,3 separated by a separating wall 4.

In the drawn embodiment the first pipe 1  
15 comprises an outer pipe 5 in which are placed two inner pipes 6 respectively 7 so that separating wall 4 is formed by two inner pipes 6,7.

A similar situation applies for a second pipe 8. This comprises a first passage 9 and a second passage  
20 not shown in the drawing. Both passages are separated by a partition wall 10, while the whole assembly of the second pipe is formed by an outer pipe 11 and two inner pipes 12, wherein the second is not shown in the drawing.

Both pipe pieces connect to each other. The end  
25 of outer pipe 5 is thus widened to form a cup 13 and the corresponding end of outer pipe 11 is provided with a collar 14. Placed between the end of pipe 11 and collar 14 is an annular junction 15 which on its outside has substantially the shape of a segment of a sphere.

30 Both pipe pieces 1,8 are fixed to each other by a coupling not shown in the drawing which allows a rotation movement between both pipe pieces but which holds both pipe pieces in mutual contact.

In order to ensure that the gas flows flowing  
35 in passages 2 and 3 are permanently separated, separating walls 4 respectively 10 extend to within close proximity of each other. In order to enable the rotation movement

of the pipe pieces one of the two separating walls is herein provided with a concave end wall while the other is provided with a convex end wall.

It will be apparent that in this embodiment a separation is maintained between both gas flows only when the rotation is limited only to rotation on a single axis.

If it is desired for the tubes to mutually rotate on more than one axis, another embodiment, which will be elucidated with reference to the other figures, is more attractive.

Figure 2 shows an application of such an embodiment.

Figure 2 shows an engine block 16 provided with an exhaust manifold 17 which runs out into a pipe piece 18. A catalytic converter 19 is further shown, wherein converter 19 and pipe piece 18 are joined by a connection 20. Converter 19 is once again connected on its outlet side to a further pipe piece 21 which leads to the further components of the exhaust system. Here also a connection 22 is arranged between converter 19 and pipe piece 21.

As can be seen in figure 3, pipe piece 18 is provided with a separating wall 23 whereby pipe piece 18 comprises two different passages 24 respectively 25. So as to prevent short-circuit between the gas flows occurring in both passages 24 respectively 25, it is important that the gas flows are only combined with each other after a certain distance. Earlier combining would result in a kind of short-circuit of both flows, whereby mutual influencing would occur which would have a negative effect on the efficiency of the engine. In modern automobiles it is important that the catalytic converter be placed as close as possible to the engine, on the one hand to bring converter 19 as quickly as possible to the desired operating temperature and on the other to maintain this temperature. This will result in

the most effective possible use of the catalytic converter.

In view of the foregoing, it is important that the gas flows coming from the pairs of cylinders are separated at least up to the catalytic converter. Use is made for this purpose of the fact that a catalytic converter is provided with a large number of parallel channels of small cross-section. This measure is taken in order to make the active surface area of the catalytic converter as large as possible.

The present invention makes surprising use of this property by causing the structure forming the separating walls of the catalytic converter to extend to a point at least a short distance from separating wall 23. The separation between passages 24 and 25 is herein maintained into the catalytic converter. Because connection 20 further allows an angular displacement of the axes of pipe piece 18 and catalytic converter 19 and the converter structure extends as a sphere, this separation is maintained, also in the case of small angular displacements. Separating wall 23 will of course not always connect directly onto the separating walls of the catalytic converter, since these latter often have a triangular or hexagonal structure. Given the small cross-section of the channels, the effect thereof is negligible.

In view of the fact that the exhaust gas flow coming from the engine has to be distributed over the diverse channels of the catalytic converter, this latter must have a larger passage than the exhaust pipe. On the one hand the walls in the converter take up space and on the other the flow resistance of the sum of the individual channels is much greater than that of a single passage with the same cross-section.

Use is therefore made of conical pieces to compensate the differences in diameter.

It is important here that this embodiment allows of angular displacements over different angles. This is in contrast to the embodiment shown in figure 1.

A similar construction is arranged on the other side of the catalytic converter, wherein however no separating wall is arranged in pipe piece 21. It will be apparent that this can take place without problem, wherein the plane of the separating wall does not really make any difference.

10        Such a situation is shown for instance in figure 4, wherein the catalytic converter channels otherwise extend outward on both sides as a sphere. In this embodiment the length of the channels in the converter is greater in the centre than at the edges. The  
15 efficiency of the converter will therefore be greater there than on the outside. This provides the option of controlling this efficiency.

It is for instance possible to make the separating walls concave on both sides; the catalytic  
20 converter channels in the centre are then shorter and therefore less effective. When the separating wall is concave on one side and convex on the other side, all channels have the same length. The choice provides the option of adapting the efficiency of the catalytic  
25 converter to the distribution of the flow and the temperature distribution of the gas flow.

Figure 5 shows a further variant. This variant is suitable for the use of a pipe of the "CC" type between the engine and the catalytic converter, such as  
30 is applied in 5-cylinder engines. In order to maintain a good distribution of the gas flows, in the conical element the separating wall 27 between both outer passages and the internal passage is also embodied conically. The effect thereof is that the ratio of the  
35 cross-section of the passages in the conical element is maintained. A good distribution of the gas flows over the

cross-section of the catalytic converter is hereby obtained.

Further in this embodiment the boundary surface between the catalytic converter and the first pipe piece 5 takes a convex form and the second boundary surface is concave. All converter channels thus have the same length.

It will be apparent that diverse changes can be made to the embodiment shown here without departing from 10 the inventive concept: it is thus possible to make use of more complicated separating wall structures in the pipe pieces instead of a single separating wall. Application is moreover not limited to a catalytic converter; it is possible to apply structures designed specially for this 15 purpose.

009230-08350

## CLAIMS

1. Connection between a first pipe piece and a  
5 second pipe piece, wherein the cross-section of both pipe  
pieces is substantially equal, wherein the connection  
allows at least a mutual angular displacement of the axis  
of both pipe pieces in a plane extending through both  
axes, wherein the first pipe piece comprises at least two  
10 passages, the second pipe piece comprises at least two  
passages, and in any mutual position of the pipe pieces  
the separating walls between the passages in the first  
pipe piece at least practically make contact with the  
separating walls between the passages in the second pipe  
15 piece, **characterized in that** both pipe pieces have a  
round cross-section and that the boundary surface between  
the pipe pieces extends substantially as a sphere with  
the point of rotation of the pipe pieces as centre.

2. Connection as claimed in claim 1,  
20 **characterized in that** the second pipe piece is provided  
with a number of passages larger than two.

3. Connection as claimed in claim 2,  
**characterized in that** the number of passages in the  
second pipe piece is so large that the cross-section of  
25 the passages is at least two orders of magnitude smaller  
than the cross-section of the second pipe piece.

4. Connection as claimed in any of the  
foregoing claims, **characterized in that** the boundary  
surface towards the second pipe piece is concave.

30 5. Connection as claimed in any of the  
foregoing claims, **characterized in that** the diameter of  
the first pipe piece is smaller than that of the second  
pipe piece and that the first pipe piece connecting onto  
the boundary surface comprises a conical part.

35 6. Connection as claimed in claim 5,  
**characterized in that** the cross-section of the passages



in the conical part is proportional to the cross-section of the conical part.

7. Connection as claimed in any of the foregoing claims, **characterized in that** both pipe pieces form part of an exhaust system of a motor vehicle.

8. Connection as claimed in claim 7, **characterized in that** the first pipe piece forms a connection between an engine of a motor vehicle and a catalytic converter, and that the second pipe piece is formed by a converter housing.

9. Connection as claimed in any of the foregoing claims, **characterized in that** the outer walls of the pipe pieces are coupled in mutually elastic manner.

10. Connection as claimed in claim 9, **characterized in that** the outer walls of the pipe pieces are each provided with a bent edge, which edges are coupled in mutually elastic manner.

11. Connection as claimed in any of the foregoing claims, **characterized in that** the first pipe piece comprises a passage located concentrically of the outer wall.

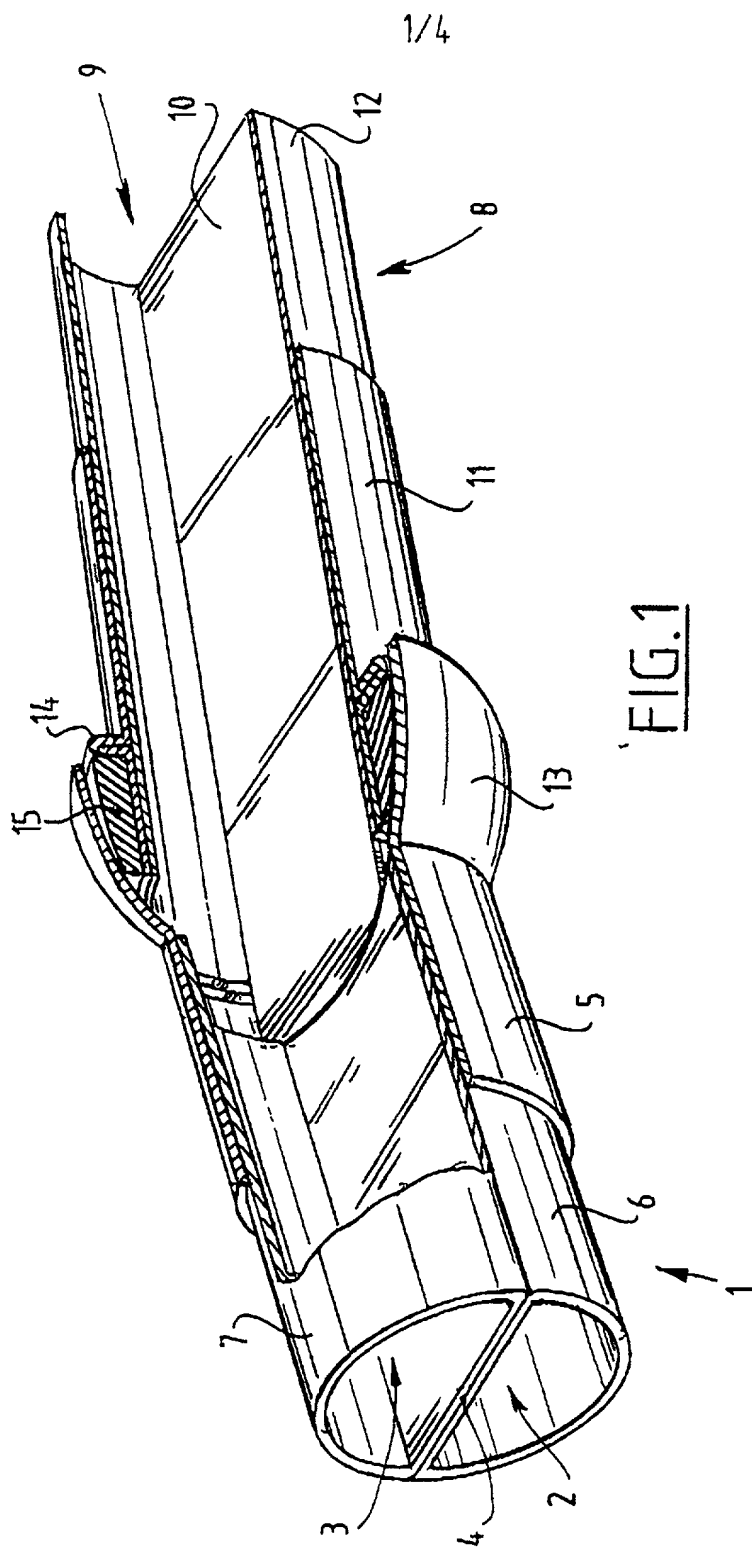
12. Connection as claimed in any of the foregoing claims, **characterized in that** at least one of the pipe pieces is provided with a sleeve arranged concentrically round the relevant pipe piece.

13. Connection as claimed in claim 12, **characterized in that** an insulating layer is arranged between the sleeve and the relevant pipe piece.

14. Connection as claimed in any of the foregoing claims, **characterized in that** at least one of the two pipe pieces is connected to the connection by means of a cone.

15. Connection as claimed in claim 8, **characterized in that** the catalytic converter is connected to the exhaust pipe on the outlet side of a connection as claimed in claim 1.

16. Connection as claimed in claim 15,  
**characterized in that** the boundary surfaces are convex on  
one side of the catalytic converter and concave on the  
other side of the converter.



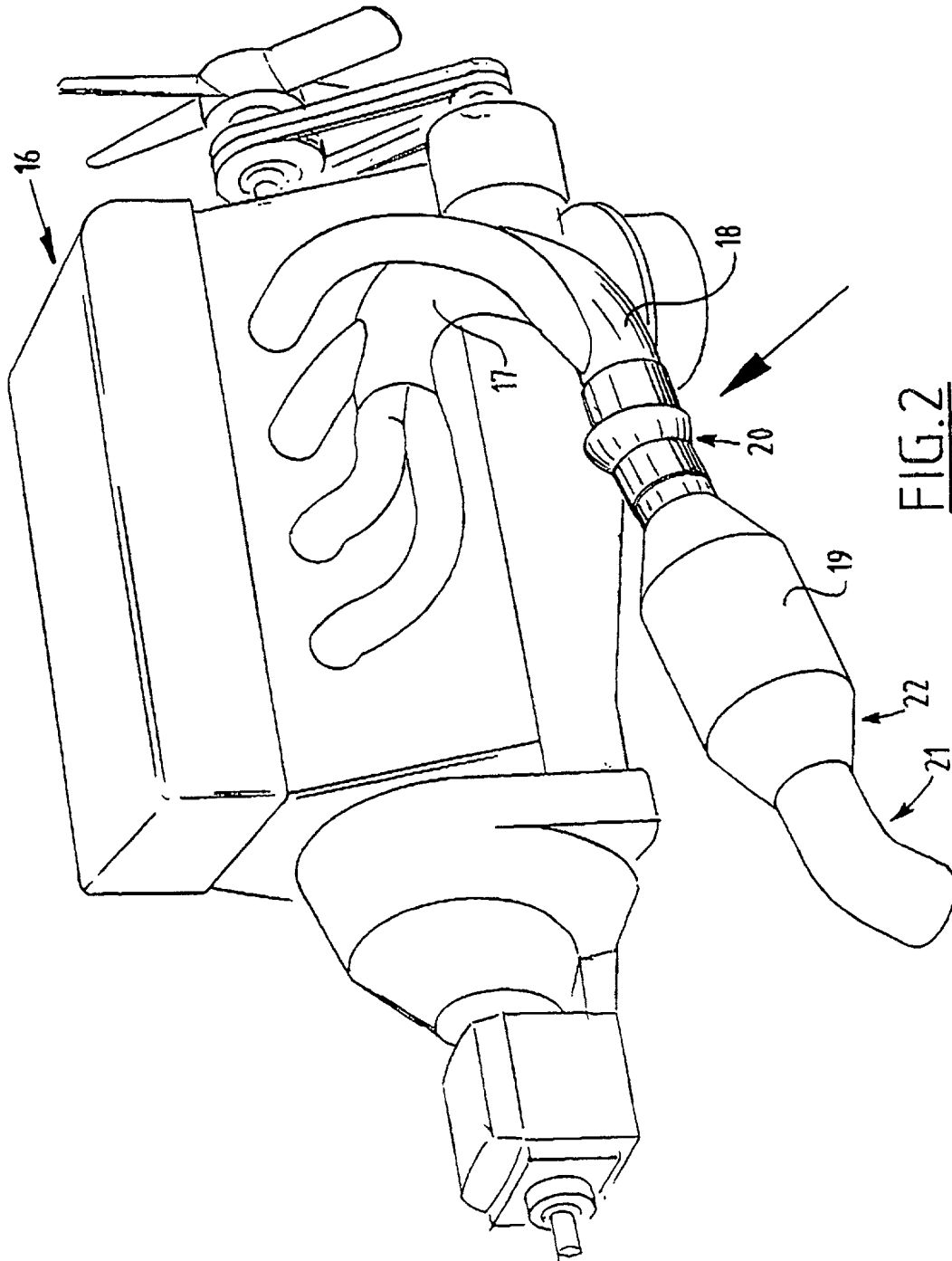
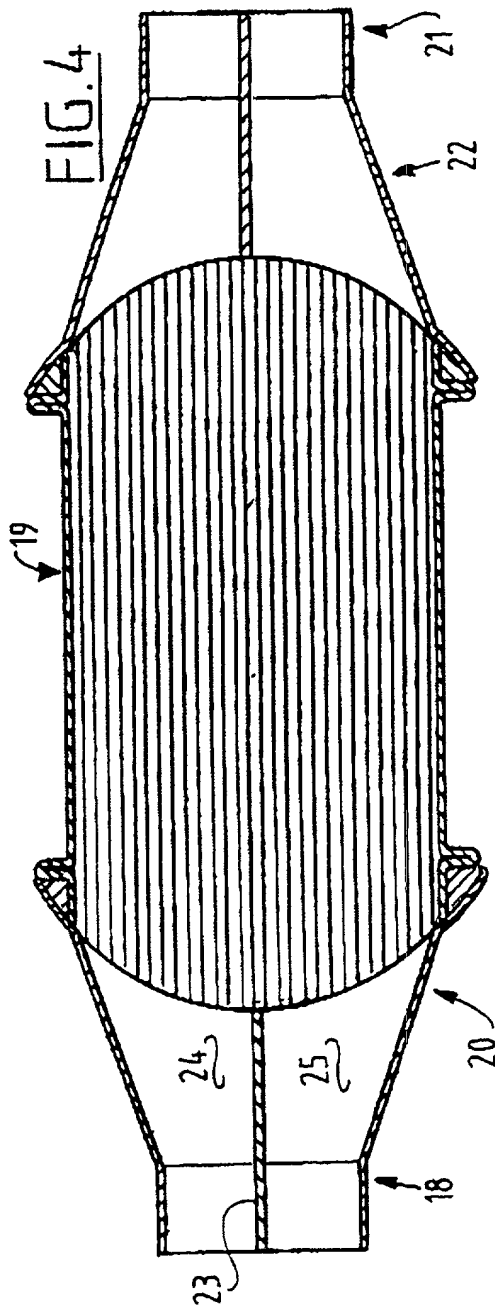
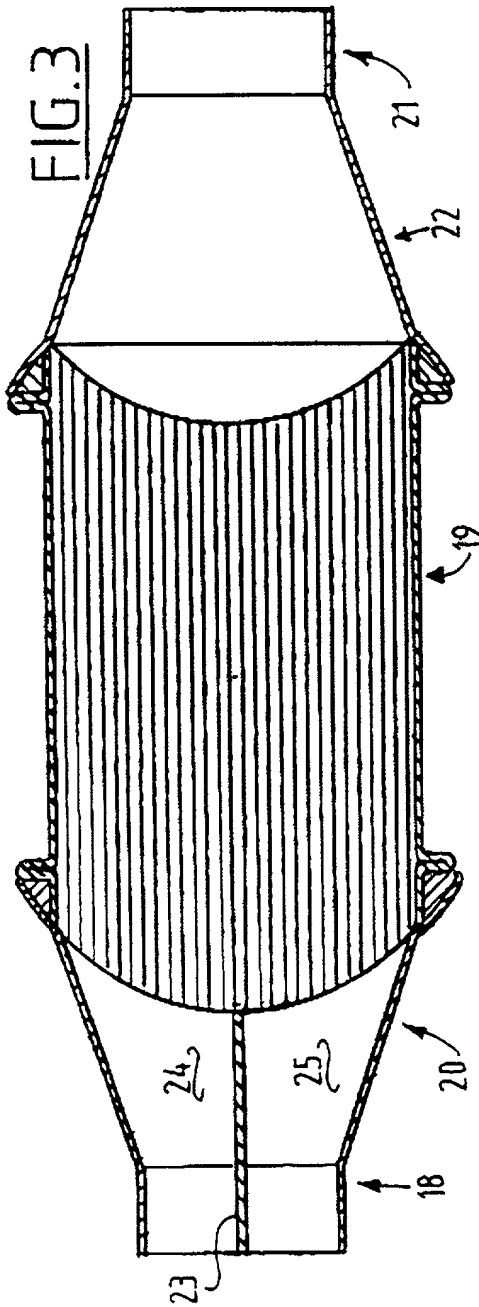
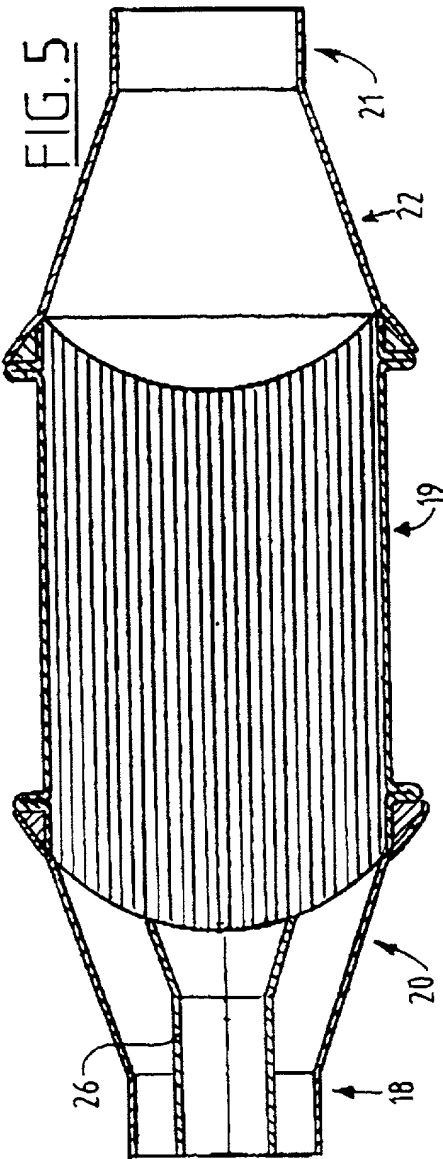


FIG. 2





U-2

**SOLE DECLARATION FOR PATENT APPLICATION**

As the below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled PIPE CONNECTION, the specification of which

- ☐ Is attached hereto.
- ☒ was filed on July 6, 2000 as Application Serial Number 09/582,872 and was amended on July 6, 2000 (if applicable).
- ☒ was filed under the Patent Cooperation Treaty (PCT) and accorded International (PCT) Application No. PCT/NL98/00723, filed December 21, 1998, and amended on April 12, 2000 (if any).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I hereby acknowledge the duty to disclose information which is material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56(a).

**Prior Foreign Application(s)**

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Country	Application No.	Date of Filing (day month year)	Date of Issue (day month year)	Priority Claimed Under 35 U.S.C. §119
The Netherlands	1007986	8 January 1998		yes

**Prior United States Provisional Application(s)**

I hereby claim priority benefits under Title 35, United States Code, §119(e)(1) of any U.S. provisional application listed below:

U.S. Provisional Application No.	Date of Filing (day month year)	Priority Claimed Under 35 U.S.C. §119(e)(1)

**Prior United States Application(s)**

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application Serial No.	Date of Filing (Day, Month, Year)	Status — Patented, Pending, Abandoned

## Power of Attorney

And I hereby appoint, both jointly and severally, as my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith the following attorneys and agents, their registration numbers being listed after their names:

ALTHERR, Robert F.	31,810	HONG, Patricia E.	34,373	NELSON, Jon O.	24,568
BANNER, Donald W.	17,037	HOSCHEIT, Dale H.	19,090	NIEGOWSKI, James A.	28,331
BANNER, Mark T.	29,888	HYMEL, Lin J.	45,414	PATEL, Binal J.	42,065
BANNER, Pamela I.	33,644	IWANICKI, John P.	34,628	PATHAK, Ajay S.	38,286
BECKER, Matthew P.	45,824	JACKSON, Thomas H.	29,808	PAYNE, Stephen S.	35,316
BECKETT, William W.	18,262	KAGAN, Sarah A.	32,141	PETERSON, Thomas L.	30,969
BERGHAMMER, Joseph J.	46,057	KATZ, Robert S.	36,402	POTENZA, Joseph M.	28,175
BODNER, Jordan	42,338	KLEIN, William J.	43,719	PRATT, Thomas K.	37,210
BUROW, Scott A.	42,373	KRAUSE, Joseph P.	32,578	RENK, Christopher J.	33,781
CALLAHAN, James V.	20,095	LINEK, Ernest V.	29,822	RESIS, Robert H.	32,168
CHANG, Steve S.	42,402	MALONE, Dale A.	32,155	RIVARD, Paul M.	43,446
COHAN, Gregory J.	40,959	MANNAVA, Ashok K.	45,301	ROBINSON, Douglas W.	32,751
COOPERMAN, Marc S.	34,143	MAPLE, Marie-Claire B.	37,588	SCHAD, Steven P.	32,550
CURTIN, Joseph P.	34,571	MAY, Steven A.	44,912	SHIFLEY, Charles W.	28,042
DAWSON, John R.	39,504	McDERMOTT, Peter D.	29,411	SKERPON, Joseph M.	29,864
DeMOOR, Laura J.	39,654	McKEE, Christopher L.	32,384	STOCKLEY, D. J.	34,257
EVANS, Thomas L.	36,805	McKIE, Edward F.	17,335	VAN ES, J. Pieter	37,746
FEDOROCHKO, Gary D.	35,509	MEDLOCK, Nina L.	29,873	WITCOFF, Sheldon W.	17,399
FISHER, Daniel E.	34,162	MEECE, Timothy C.	38,553	WOLFFE, Franklin D.	19,724
FISHER, William J.	32,133	MEEKER, Frederic M.	35,282	WOLFFE, Susan A.	33,568
GLEMBOCKI, Christopher R.	38,800	MILLER, Charles L.	43,805	WRIGHT, Bradley C.	38,061
HANLON, Brian E.	40,449	MITRIUS, Janice V.	43,808		
HEMMENDINGER, Lisa M.	42,653	MORENO, Christopher P.	38,586		

All correspondence and telephone communications should be addressed to:

Banner & Witcoff, Ltd.  
1001 G Street, N.W., 11th Floor  
Washington, D.C. 20001-4597

Customer Number: 22907  
 Tel: (202) 508-9100  
 Fax: (202) 508-9299

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature \_\_\_\_\_

Date \_\_\_\_\_

Full Name of Sole Inventor GROBBENHAAR

Hermanus

G.

Residence Herkenbosch, The Netherlands

Family Name

First Given Name

Second Given Name

NLX

Citizenship Dutch

Post Office Address Stationsweg 82D, NL-6075 CH Herkenbosch, The Netherlands